SM-500

USER GUIDE

SWR SOUND CORP. • SUN VALLEY, CA • USA

SM-500 USER GUIDE

INTRODUCTION

The SM-500 Professional Bass Amplifier provides the power, performance, flexibility and portability required by the professional bassist for every style of playing and nearly every playing situation.

To design an amplifier that would cover “all of the basses,” SWR had to use almost every imaginable type of electronic component available. This added up to an all TUBE preamp section, a limiter circuit utilizing Field Effect Transistors (“FETs”), tone and equalizer controls utilizing integrated circuits, and two individual power amps employing discrete, solid state devices.

The power amplifiers in the SM-500 can be used individually to provide full stereo capabilities, each delivering 250 watts into individual 4 ohm speaker enclosures. In the event that more power is required, the amplifiers can be bridged for 400 Watts @ 8 ohms or 550 watts @ 4 ohms. The power amps are cooled by a thermostatically controlled fan and the chassis is vented on its rear and right side.

The SM-500 also boasts a studio-oriented “side chain" effects loop allowing you to use an effects unit while maintaining the constant clarity and naturalness of the instrument. The SM-500’s Tuner Out jack is also on a side chain. Remember when you had to unplug your bass from your amp and hook into your tuner and frantically tune up between songs? Or install the tuner between your instrument and amp, thus degrading sound quality? Those times are history!

The SM-500 is housed in an all aluminum chassis for light weight and lasting beauty and weighs just 20 pounds. It is easily carried by the heavy-duty, chrome rack handles secured to the front panel.

The tube employed in the preamp section of the SM-500 is a specially selected 12AX7 and should not require replacement for one to three years.

To get the most out of your SM-500, please take the time to read through the entire owner’s manual.

SM-500 FRONT PANEL FEATURES

- Dual independent input jacks compatible for both active and passive instruments
- Gain Control with LED peak clipping indicator
- Variable Limiter Control
- Aural Enhancer Control
- Bass Control ±15dB cut/boost (shelving point: 80Hz)
- Treble Control ±15dB cut/boost (shelving point: 2kHz)
- Transparency Control ±15dB cut/boost (shelving point: 5kHz)
- Variable Graphic Equalizer with ±15dB cut/boost
  - Band One: 31Hz to 160Hz
  - Band Two: 80Hz to 320Hz
  - Band Three: 200Hz to 800Hz
  - Band Four: 400Hz to 1.6kHz
- Effects Blend Control
- Dual Concentric (Stereo) Master Volume Control
- Speaker On/Off Switch
- Power On/Off Switch
- Rack Handles

SM-500 REAR PANEL FEATURES

- Balanced XLR Output with select switch for Line or Direct Mode
- XLR ground lift & pad control
- Power Amp Assign Switch (selects Bridge or Stereo mode)
- Side Chain Effects Loop
- Tuner Output
- Two 1/4" jacks per side for Left and Right Stereo Output
- One Speakon® output jack per side for Left and Right Stereo Output
- One Speakon® output jack for Mono/Bridge operation
- (2) Speaker fuses: 3AG, 8 amp, fast-blo
- (1) Line Fuse: 3AG, 7 amp, slo-blo
- AC power cord receptacle

SM-500 SPECIFICATIONS

Note: *All measurements were taken with a line voltage of 120VAC. All noise specifications are "unweighted." All voltages and watts are "RMS." All measurements taken with tone controls set flat, Aural Enhancer at minimum.*

POWER *(minimum):*

Bridge/Mono Mode

500 Watts @ 4 Ohms

400 Watts @ 8 Ohms

250 Watts @ 16 Ohms

(minimum load = 4 Ohms)

Stereo Mode (per side)

300 watts @ 2 Ohms

250 watts @ 4 Ohms

150 watts @ 8 Ohms

(minimum load = 2 Ohms)

FREQUENCY RESPONSE *(power amplifier):* 10Hz to 40kHz

SENSITIVITY (full output under clipping, 8 ohms load, 100Hz):

Passive Input Jack: 38 millivolts

Active Input Jack: 155 millivolts

Power Amplifier (Effects Return Jack "in"): .5 volts

INPUT IMPEDANCE:

Passive/Active Input: 800kohms

Active Input: 60kohms

Effects Return: 27kohms

OUTPUT IMPEDANCE:

Effects Send: 100 ohms

Tuner Output: 100 ohms

XLR Balanced Out: 750 ohms

SIGNAL TO NOISE RATIO: –72 dB (<10 millivolts typical)

EQUIVALENT INPUT NOISE: 9 microvolts

SIZE *(measured from the rack ears back):* 19" W x 3.5" H x 13.375" D (82.6 x 8.9 x 39.73 mm)

WEIGHT: 20 lbs. (9.07 kg)

SM-500 FRONT PANEL FEATURES

INPUT JACKS

Both input jacks accept a standard 1/4" phone plug and both inputs can be used at the same time. Since the two inputs are totally independent, no loss in volume or tone will occur if two instruments are used simultaneously. Please keep in mind, however, that the Active/Passive input has five times more gain than the Active input.

Passive/Active Input

A “passive” instrument has no built-in preamp and does not use a battery. On the other hand, an “active” bass utilizes a battery operated preamp, either for gain, tone controls, or both. Although labeled “passive,” the Passive input jack will work with all instruments having a maximum output of less than 1 volt RMS. Generally speaking, try the Passive input jack first. If you hear a small amount of distortion and the preamp clip LED is not activated, try using the Active input jack.

Note: *If you want to overdrive the first TUBE stage, this can be accomplished by using an external preamp between your instrument and the Passive input. To obtain optimum sound when trying this, make sure the preamp clip LED is not activated. If this occurs, turn down your Gain control. The first preamp tube stage is NOT monitored by the preamp clip circuit for this reason.*

Active Input

The Active input jack should be used with instruments having a built-in (on board) preamp that will produce signals over 1 volt RMS. Basses with really “hot” pickups may be more compatible with this input. If you are using a KEYBOARD or BASS PEDAL, etc. with the SM-500, we have found the best choice to be the Active input.

Note: *Using the Active input with a passive instrument may result in a loss of high end transients. Players who roll off their high end frequencies starting at about 2kHz or who prefer a “darker” sound may prefer to use this input.*

If you hear some distortion with your active bass and are using the Active input jack, *check your instrument’s battery.* Also, make sure that the preamp clip LED is not lit. Following these instructions can save you and a service technician a lot of aggravation.

GAIN CONTROL

The Gain control adjusts the volume of the preamp section. After the tone controls, Variable Graphic Equalizer, and Limiter are set to your liking, the Gain control should be set to where the Preamp Clip LED barely flashes upon striking your loudest note. Then adjust the Master Volume to the desired volume level. Utilizing these controls in this manner assures the user of maximum signal-to-noise ratio and prevents distortion caused by the preamp circuits clipping.

PREAMP CLIP LED

The Preamp Clip LED will light if any portion of the preamplifier reaches clipping or runs out of headroom. This can be caused by the Gain control being set too high or any tone or equalizer control set in a high boost position. To correct this condition, turn down one of the previously mentioned controls.

Note: *The Preamp Clip LED indicates that at some point the preamplifier is clipping. No harm is being done to your amplifier but, clipping of the power amplifier can cause damage to your speakers and is not recommended.*

LIMITER

The Limiter circuit prevents the signal from exceeding a preset level. The Limiter control sets the "threshold," which is the level at which limiting begins to take effect. The Limiter LED will light to indicate that the signal has reached the limiter threshold and that the Limiter is now active. The Limiter is completely out of the circuit when the Limiter control is set to the "Off" position. Loss in volume caused by extreme limiting can be overcome by increasing the level of the Master Volume control.

> ***Note:*** *If the Threshold is set at maximum and still no limiting effect occurs, the Gain control is set too low and should be increased to a desired level.*

AURAL ENHANCER

SWR's Aural Enhancer control was developed to bring out the fundamental low notes of the bass guitar, reduce certain frequencies that help mask the fundamentals, and enhance the high end transients. The resulting frequency response should be similar to that used for recording the bass in the studio. This effect becomes more radical as the control is turned to maximum. The result is a more "transparent" sound and is especially noticeable when "slapping" on the bass guitar.

Basically, the Aural Enhancer can be thought of as a tone-shaping control, as it is a passive R/C network that alters the frequency response throughout the bass spectrum. This pre-shaping is "blended" into the original signal via the Aural Enhancer control. Exact frequencies affected are dependent on the characteristics of the instrument used.

BASS CONTROL

The Bass control is a shelving-type tone control that cuts or boosts the lower or bass frequencies from mid-position. Starting at mid-position, turning the control counter-clockwise cuts the bass response and turning the control clockwise boosts the bass response. Shelving point for this control is 80Hz.

VARIABLE GRAPHIC EQUALIZER

Level Control (Slider)

The Level control slider cuts or boosts the frequency set by the Frequency control knob located directly beneath it. It is used in the same manner as a Graphic Equalizer. Starting at mid-position, moving the slider up or towards "+15" *boosts* the selected frequency, while moving the slider down from mid-position or towards "–15" *cuts* the selected frequency.

Frequency Control

The Frequency control selects the center frequency that will be cut or boosted by the Level control directly above it. If The Level control is at "0" or mid-position, moving the Frequency control will have no affect on the sound. The Frequency control covers a three octave range.

To better understand how the Level and Frequency controls work with each other, try the following example:

1. Set the Gain and Master Volume controls for listening level.
2. Set all tone and level controls at mid-position and turn all frequency controls fully counter-clockwise.
3. Strike the open "E" string on the bass and move the Level Control on the first band of the Equalizer to +15 (the Frequency control should be set at 40Hz, which is the fundamental that the open "E" string produces). The change in sound and pressure levels is a result of the fundamental "E" note being increased by approximately 15db.

4. Keeping all controls in their present positions (Level control at +15 and Frequency control at 40Hz), strike your open "E" string again and move the Frequency control from 40Hz to 160Hz. As the Frequency Control is moved from 40Hz to 16Hz you should hear two increases in volume. The first will be at 80Hz or your first overtone (harmonic) and the second will be at 160Hz or the second harmonic of your open "E" string.

From the above example a few things may be apparent. One, there's a lot of information contained in one note on your instrument. Two, if one position of the Frequency control gives a much louder sound or volume, you may have found the area of greatest efficiency of your speaker cabinet. And, three, the tonal variations you can achieve with the Variable Graphic EQ are just about infinite!

TREBLE/TRANSPARENCY CONTROL

The Treble/Transparency control is a dual concentric knob that offers individual control over the Treble and Transparency functions.

The Treble control (outer knob) is a shelving-type tone control that cuts or boosts the high frequencies. Starting from mid-position, turning the Treble Control counter-clockwise *cuts* the high frequencies, while turning the control clockwise *boosts* them. Shelving point for this control is about 2kHz.

The Transparency Control (inner knob) is a shelving-type tone control that cuts or boosts the high frequencies a full octave above the treble function. Shelving point for this control is about 5kHz.

EFFECTS BLEND CONTROL

This function "blends" the signal sent from your bass, etc., with that coming from your effects unit. With the Effects Blend control fully counter-clockwise ("dry"), no signal from your effect will be heard. As you turn this control clockwise, more of the effect can be heard in the overall sound. When the control is set fully clockwise ("wet"), no true or unaffected signal is heard other than what your effects unit provides.

The Effects Blend circuit is similar to that used on recording consoles with the effects loop on a "side chain" to the normal circuit. Unless the control is set to the full wet position, you will always get the full sound of your instrument and get the diversity an effects unit offers. This circuit is also effective in reducing noise caused by effects units because it is located after the gain stages. When not using an effect, the Effects Blend control should be set to the fully counter-clockwise position.

STEREO MASTER VOLUME CONTROL

The Stereo Master Volume control adjusts the volume of the internal power amplifiers. It should be used in conjunction with the Gain control to achieve maximum signal-to-noise ratio. The SM-500's Stereo Master Volume control is a dual-concentric knob that offers individual volume control over both the right side (outer knob) and left side (inner knob) when the SM-500 is being run in the Stereo Mode. When the SM-500 is being run in the Bridge/Mono Mode, the inner knob controls the overall volume (the outer knob is disabled and will have no effect in Bridge/Mono Mode).

SPEAKER ON/OFF SWITCH

Moving the Speaker On/Off Switch to the "On" position allows the signal from the amplifier to be heard through any speaker enclosure(s) connected to the SM-500's output section. Moving the Speaker On/Off Switch to the "Off" position disables the SM-500's output section. This feature allows the user to:

1. Use the XLR Output without using the internal speakers. This is especially useful in recording when you are miking the speakers and only a direct signal is required.
2. Tune up without interfering with other band members while using the Tuner Output feature.

Note: *If you do not hear any sound when you plug in and your system is properly connected, check the position of the Speaker On/Off switch.*

POWER ON/OFF SWITCH

Moving the Power switch to the "On" position will turn on you amplifier as indicated by the Power LED lighting.

SM-500 REAR PANEL FEATURES

AC CORD RECEPTACLE

The SM-500 accepts a standard AC power cable (supplied with the SM-500), used with almost all current musical, professional and household electronic devices. If it becomes misplaced, a replacement can be purchased at almost any computer, electronics, or pro audio store.

> ***Note:*** *The rating for this cable is 3 conductor, 10 amperes minimum. If replacement is necessary, or if you need a longer cable, look for the rating on the cable and be sure it is at least 10 amps.*

Make sure the AC cord is plugged in all the way in both the amp and the wall socket. If your cord ever becomes frayed or split, replace it immediately.

POWER AMP ASSIGN SWITCH

The position of the Power Amp Assign switch determines the SM500's mode of operation (based on the impedance of the cabinet or cabinets that you intend to use). If you want to run your amplifier in Stereo mode, move the Power Amp Assign switch to the "Stereo" position. Operation in Bridge mode is achieved by setting the switch to the "Bridge" position. (For Stereo and Bridge/Mono mode connection information, see diagrams beginning on page XX.)

Minimum impedance in the **Stereo** mode is 2 ohms per side. This means that you can connect:

- One 2 ohm speaker enclosure per side
- Two 4 ohm speaker enclosures per side
- Four 8 ohm speaker enclosures per side

Minimum impedance in the **Bridge / Mono** mode is 4 ohms. This means that you can connect:

- One 4 ohm speaker to the Bridge/Mono output
- Two 8 ohm speaker enclosures to the Bridge/Mono output
- Four 16 ohm speaker enclosures to the Bridge/Mono output

Damage to the SM-500's power amplifier section may occur if speaker enclosures are connected to the speaker output section with impedances that total less than the minimum loads listed above. The owner's manual that came with your speaker cabinet should state its total impedance. On SWR speaker enclosures, the total impedance is generally indicated on the speaker's input panel.

To figure out the total impedance of two or more cabinets of equal value hooked up in parallel, divide the impedance of one cabinet by the number of cabinets:

Impedance of one cabinet / number of cabinets = total impedance

For an in-depth discussion of impedance/power rating issues, we recommend reading the article "Plug & Play," which cane be found in the "Press" section at: ***swrsound.com***

LEFT & RIGHT SPEAKER FUSES

The left and right speaker fuses are provided to protect your speakers in the unlikely event of a power amp failure or incorrect connection procedures. Size and rating of the fuses are 3AG, 8 amp, fast-blo. Do not defeat the purpose of this feature by using a higher rated fuse.

The speaker fuses can open if there is a fault in the speaker cable or the speakers themselves. Therefore, it is always wise to carry extra fuses at all times.

SPEAKER OUTPUT JACKS

Note: *If you are using only one channel (in Stereo mode), use the left channel speaker output, as the thermal sensor for the fan is located on the left heat sink.*

When used in Stereo mode, the internal power amplifiers of the SM-500 will deliver 300 watts @ 2 ohms, 250 watts @ 4 ohms and 150 watts into 8 ohms. Optimum performance will be achieved by using a total of 4 ohms per channel. When using 2 ohms loads, the amplifier will run hotter than normal and the internal fan will be running most of the time. Minimum speaker load in the stereo mode is 2 ohms per side.

When used in the Bridge mode, the SM-500 will deliver 250 watts into 16 ohms, 400 watts into 8 ohms, and 500 watts into 4 ohm loads. Please make sure the speakers you use in this mode can handle the power. Minimum load in the "Bridge" mode is 4 ohms.

LEFT & RIGHT (STEREO) SPEAKER OUTPUT JACKS

There are two 1/4" jacks and one Speakon® jack provided for each side of the output section of the SM-500. The Left and Right speaker jacks are provided for use in the Stereo Mode only. DO NOT use these jacks when the SM-500's Power Amp Assign switch is in the "Bridge" position. You can balance the Left and Right channels by using the Stereo Master Volume control located on the front panel. Make sure all speakers are connected BEFORE turning on the amplifier whenever possible. Connecting (or disconnecting) your speakers while the amplifier is on is not recommended.

SPEAKON VS. 1/4" JACKS

We have found the Speakon connection to be superior in both stability and amperage conductivity, so we have provided Speakon output jacks in addition to the standard 1/4" jack. If the Speakon output jack is used, we highly recommend a Speakon-to-Speakon speaker cable (supplied with the SM-500). If your speaker enclosure does not have a Speakon input jack, you should use the 1/4" output jacks on the SM-500 and connect them accordingly.

Note: *All SWR Professional Line speaker cabinets come equipped with Speakon input jacks.*

The SM-500's Speakon jacks are wired "standard"" (+1/–1) and additional Speakon-to-Speakon cables are available through most music stores.

SPEAKER CABLE

Speaker cable should be made of 18-gauge, or heavier, wire. (The thicker the wire, the lower the gauge, so 18-gauge is heavier than 20-gauge and so on.) Do not use instrument cables to hook up your speakers. This can result in intermittent power loss, cause your power amp to oscillate, and damage itself and/or your speakers, and render the cables useless for any purpose.

BRIDGED OUTPUT SPEAKON® JACK

The Speakon jack marked "Bridge," located directly below the Power Amp Assign Switch (in the center of the "Speaker Outs" section), is provided for use in the Bridged/Mono mode only. A six-foot heavy-duty speaker cable (Speakon-to-Speakon) is provided with each unit for your convenience. MAKE SURE that the Power Amp Assign switch is set to "Mono" when using this jack!

The frequency response of the SM-500 is far greater than usually found in musical instrument amplifiers (10 Hz to 40kHz). This was engineered in order to give the bass player the same punch and clarity on stage as found in the studio or concert PA systems. Therefore, it is doubly important that you be aware of the impedance and power rating of the speakers that you intend to use and that they are compatible with the SM-500.

> ***Note:*** *Make sure your speakers can handle the power provided by the SM-500 in the Mono/Bridge mode. Speakers that have been overdriven are easy to detect and generally do not fall under a manufacturer's warranty.*

EFFECTS SECTION

Both Mono and Stereo Effects Loops are provided on the SM-500. It should be noted, though, that both cannot be used simultaneously. Always use high quality shielded patch cables for all connections between the amplifier and your effects units. Also, it is recommended that the cables be as short as possible.

The Gain control acts as an effects send level control. The amount of signal present at the Effects Send jack is governed by the Gain control on the front panel. If your effects unit is overloading and it does not provide for compensating incoming signals (such as an input volume or switches marked +4 or –10, for example), you may turn down the Gain control to avoid the overloading. If your effects unit has input level adjustments, they should be set for either 0 dB or +4 dB.

The Stereo Master Volume control may be used to recover losses in gain caused by some effects units.

Use the Effects Blend control to adjust the amount of effect with the natural signal from your instrument. No sound from your effects unit will be heard if the Effects Blend control is in the fully counterclockwise ("dry") position.

To use the ***mono*** Effects Loop, run a shielded patch cable from the SM-500's "Send" jack to the INPUT of your effects unit. Run a second patch cable from the OUTPUT of your effects unit to the SM-500's mono effects return jack. Then adjust the Effects Blend control for the mix you desire.

To use the ***stereo*** Effects Loop, run a patch cable from the Effects SEND jack to the mono input of your stereo effects unit. This generally is either the left or right input of the unit (check your owners manual). If for some reason your effects unit does not provide a mono input, purchase a "Y" mono cord from your local music or electronics store. Plug the common end in the effects Send jack and the other two ends in the left and right inputs of your effect.

If you wish to use just the internal power amps in the SM-500, the Effects Return jacks will serve as the "inputs." Insert your MONO signal source in the *mono* Effects Return jack. This will send the source to both power amps. If you have a stereo source, plug the left and right outputs into the corresponding Effects Return jacks. If you want to use just one side of the amp, use the LEFT CHANNEL ONLY. This is because the thermostat that regulates the fan is located on the left side.

TUNER OUT

The Tuner Out jack allows the user to connect an instrument tuner and tune up without having to unplug and go back and forth from amp to tuner. This feature is totally isolated from the rest of the preamp and will function regardless of the settings of any control on the front panel. Being on a side chain (isolated) also avoids loading down of the instrument causing a loss in dynamic range.

To use this feature, plug in a shielded patch cord from the Tuner Out to the INPUT on your tuner. Turn the amplifier on and you're ready to go. If you do not wish to monitor your sound while tuning up, set the Speaker On/Off switch to the "Off" position.

BALANCED XLR OUT

The Balanced Out is a true balanced output and serves two functions. In the “Direct” position, the XLR is essentially an active tube direct box. The signal is taken directly from the input jacks. No controls on the front panel affect the sound, volume or content of the signal. In the “Line” position, ALL controls on the front panel (with the exception of the Effects Blend and Master Volume) function and affect the signal. Output level in the “Line” position is determined by both the Gain and XLR pad. When using this switch, make sure it is all the way to one side or the other and not in a “half way” position, as this could result in no output.

The “Line” position can be used for recording directly into a tape machine as well as going directly to the studio board. An external power amplifier with a balanced input can be driven in the "Line" mode.

Pin out for the XLR connector are as follows:

Pin 1 = Ground Pin 2 = + Pin 3 = –

The SM-500 is compatible with Phantom Power-equipped mixing consoles.

XLR PAD AND GROUND LIFT

The XLR pad adjusts the level (volume) appearing at the XLR connector directly below in either the Line or Direct mode. Volume increases as the control is turned clockwise.

If you are in the “Line” position and change the Gain control on the front panel, the level will also change at the balanced output. You may readjust the XLR pad if necessary without affecting any other function.

A ground lift is provided for the record out XLR Output. It is built into the XLR Pad. With the knob on the XLR pad in the “In” position, the ground to pin one is engaged. Pulling the knob to the out or “Ground Lift” position will interrupt or defeat the ground on pin 1.

If a persistent hum exists after trying both positions of the ground lift, there is probably a mis-wire or bad ground in the feed lines to the board or console or a dirty or miswired AC socket. SWR recommends the purchase of an AC wall socket tester which can identify proper wiring (available at most hardware stores). These inexpensive devices are a simple way to protect you and your equipment from faulty electrical systems.

LINE OR MAINS FUSE

The size and rating of the line fuse is 3AG, 7 amp, slo-blo. NEVER replace this with a fuse of a higher rating as it will void your warranty.

INTERNAL FEATURES

COOLING FAN

The SM-500 contains an internal thermostatically controlled cooling fan. When the temperature of the heatsinks reach 50 degrees centigrade, the fan will automatically turn on and remain on until the heatsink cools down to approximately 40 degrees centigrade. This greatly reduces component fatigue and increases reliability.

For proper ventilation, make sure that all of the SM-500’s vents are unobstructed when installing it in a rack case.

Note: *At low volume levels, the cooling fan in the SM-500 may be audible.*

VACUUM TUBE (VALVE)

SWR installs a specially selected 12AX7 dual triode tube in the preamp section of every SM-500. When it becomes time to replace it, we recommend that you do so with a similar high quality product. This tube will need replacing only if it becomes noisey or microphonic (sounds like glass tinkling in the background of certain notes), or completely fails (resulting in no output).

RACK MOUNTING INSTRUCTIONS

To preserve the beauty and reliability of your amplifier, we recommend that you install your amplifier in a rack case. The SM-500 is rackmountable, requiring no additional parts or accessories other than rack screws and the rack case itself.

The SM-500 takes up two full rack spaces (3 1/2"). If the rack in which you mount the SM-500 requires that the rubber feet on the bottom of the chassis be removed, please remember to REPLACE the screws, as they help to reinforce the chassis.

The SM-500 should be mounted as close to the bottom of the rack case as possible. The height of the rubber feet was chosen so that when you slide the unit in the bottom of a rack case, the rack mounting holes on the front panel should line up with the mounting holes of the rack rail. This prevents the SM-500 from flexing downward if the rack case is dropped. If you must mount the SM-500 in an area of the rack other than the bottom space, a piece of wood or similar solid material should be installed between the bottom of the rack case and the bottom of the amplifier to prevent flexing of the amplifier's chassis. Severe or constant flexing of the chassis can damage the amplifier and is not covered under the SM-500's warranty.

Don't neglect your amp after it's been installed in a rack case. Continuous transportation and vibration can cause screws to become loose, both on the SM-500 and with your rack case rails. We recommend that at least once a month you remove the SM-500 from the case and tighten all outside screws (especially on the front panel), and wipe off the outside of the chassis with a damp cloth. Then check all the connections in your rack case and reinstall the unit.

POWER-ON TRANSIENT

When the SM-500's Power switch is moved to the "On" position, you will notice a turn-on transient heard as a "thud" through your speakers. This will not harm speakers made by SWR, however, you may connect your speaker cable to the SM-500 after powering up if you choose. Just make sure you are not playing through the unit when you make the connection, as it could cause a speaker fuse to blow. Eliminating this transient would require a component called a relay. SWR chose not to incorporate this type of component due to the fact that relays degrade signal quality and often fail, causing the unit to have no output, and requiring a trip to a local service center.

A FEW WORDS CONCERNING HEAT

One of the most asked questions about our amplifiers is why they tend to get warmer than other amps. The chassis of your amplifier can get quite warm during normal usage. This is especially true if you are using a 4 ohm total impedance in the Bridge mode. This is because a 4 ohm impedance (or 2 ohms per channel in Stereo mode) introduces the least efficient condition of the unit (in other words, power drawn from the outlet in relation to power produced in the speakers).

The difference in these two figures can be quite high, resulting in the equivalent of a high wattage light bulb in a metal box (which would obviously get quite hot).

Most musical instrument amplifiers on the market today use steel for their chassis which, in most cases, is considerably cheaper than aluminum and does not conduct heat as well as aluminum. The SM-500 uses an all aluminum chassis because it has less impurities than steel, is less susceptible to rust and is a better conductor of heat. This results in the chassis acting as a heatsink drawing

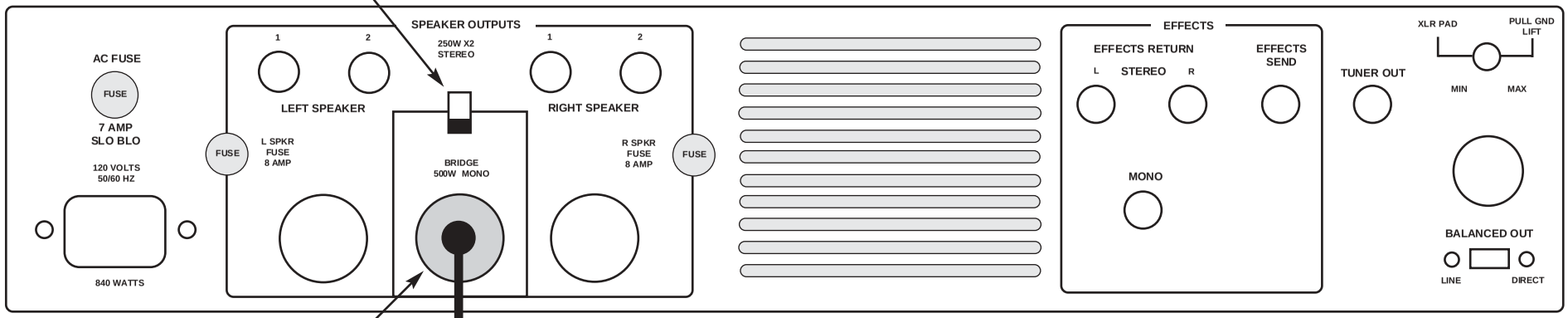
heat away from heat producing components inside and thus extending their life. In this manner, we feel we have produced a more reliable amplifier, but, at the same time, the outside of our units will get warmer than cases made out of steel.

You should be aware of the possibility of the power amp in your SM-500 becoming “over biased.” This condition can be recognized by turning your amplifier on and letting it sit without speakers plugged in and without playing it. If, under these conditions, your unit becomes quite warm, it may be over biased. This situation should be attended to and can be easily remedied in about 15 minutes by a service tech. A power amp can become over biased through continuous vibration or by any large jolt received in shipping, transportation, etc.

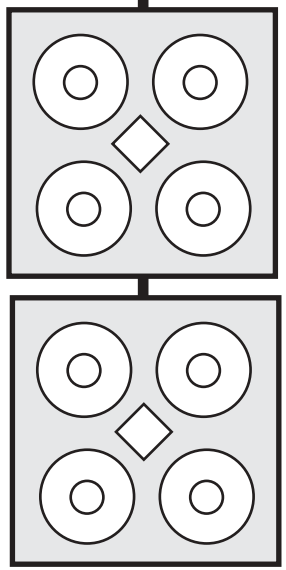
SM-500 Bridge Mode Operation Diagram

Power Amp Assign Switch set to “Bridge Mono” position.

Note: When the power amp assign switch is set to the Bridge/Mono position, only the center Speakon output jack may be used. The SM-500 delivers a minimum of 500 Watts RMS into a 4 ohm load, and 400 Watts RMS into an 8 ohm load. Please make sure that your speaker system is capable of handling this amount of power.



Center Bridge/Mono Speakon Output Jack must be used.



Speaker 1 = 8 Ohms

Speaker 2 = 8 Ohms

This example shows two 8 ohm speaker enclosures connected in parallel for a total load of 4 ohms. This is the minimum impedance that the SM-500 is designed to drive safely in the Bridge Mode. Connecting multiple enclosures that have a combined total impedance of less than 4 ohms may result in damage to your amplifier.

The following cabinet configurations may be used:

- one 4 ohm enclosure
- one 8 ohm enclosure
- two 8 ohm enclosures
- four 16 ohm enclosures

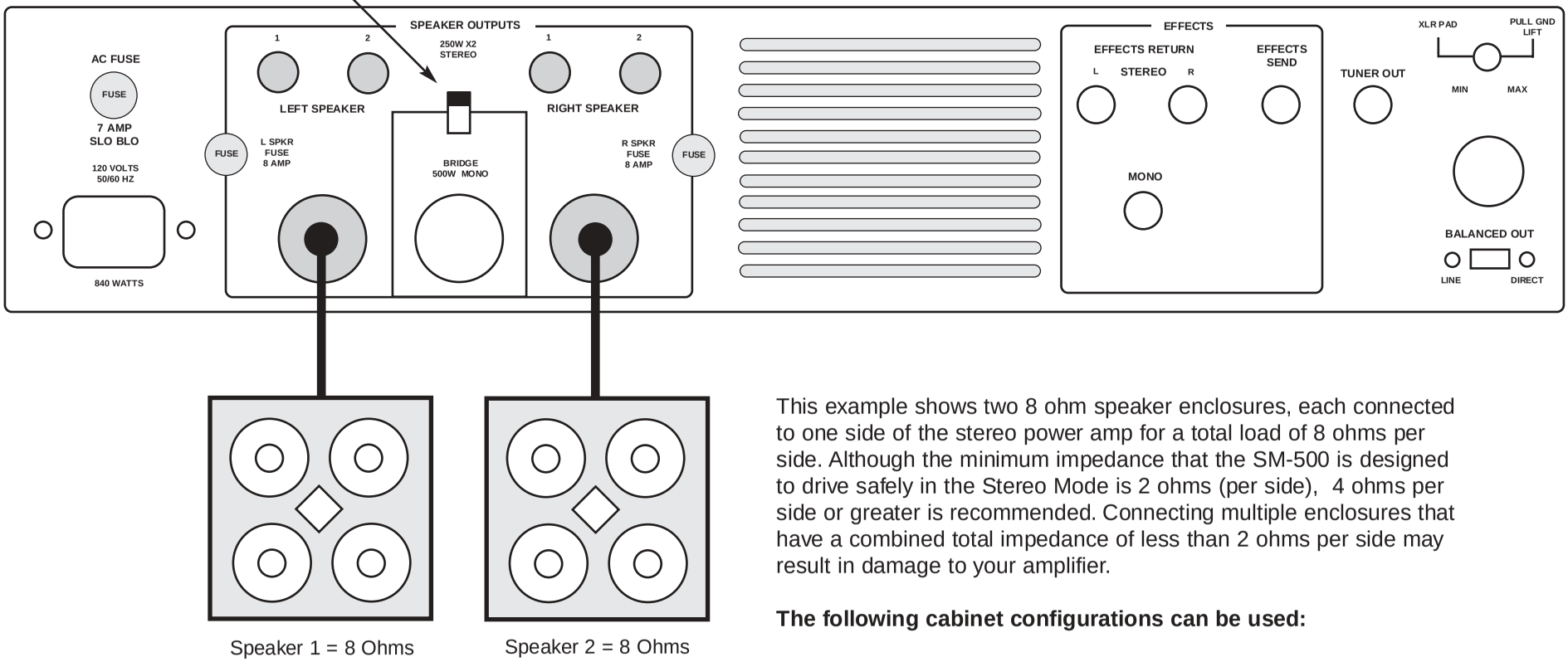
SM-500 Power Output Ratings

Bridge/Mono Mode
500 Watts @ 4 Ohms
400 Watts @ 8 Ohms
250 Watts @ 16 Ohms
(minimum load = 4 Ohms)

SM-500 Stereo Mode Operation Diagram

Power Amp Assign Switch set to “Stereo” position.

Note: When the power amp assign switch is set to the “Stereo” position, only the right and left Speakon output jacks or left and right 1/4” output jacks may be used. Do not use the center Speakon jack as it is provided for Bridge/Mono operation only.



Speaker 1 = 8 Ohms

Speaker 2 = 8 Ohms

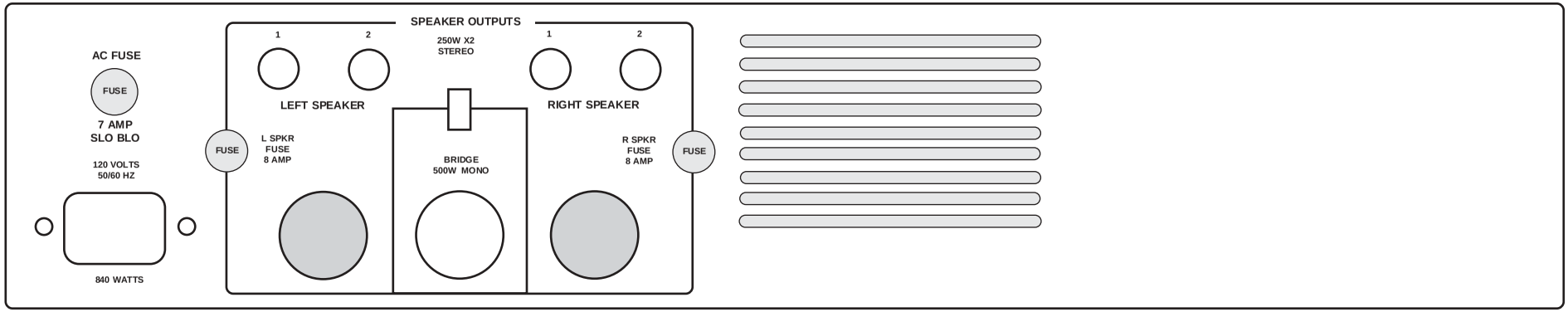
This example shows two 8 ohm speaker enclosures, each connected to one side of the stereo power amp for a total load of 8 ohms per side. Although the minimum impedance that the SM-500 is designed to drive safely in the Stereo Mode is 2 ohms (per side), 4 ohms per side or greater is recommended. Connecting multiple enclosures that have a combined total impedance of less than 2 ohms per side may result in damage to your amplifier.

The following cabinet configurations can be used:

- one 2 ohm enclosure (per side)
- one 4 ohm enclosure (per side)
- one 8 ohm enclosure (per side)
- two 4 ohm enclosures (per side)
- two 8 ohm enclosures (per side)

SM-500 Power Output Ratings

Stereo Mode (per side)
300 watts @ 2 Ohms
250 watts @ 4 Ohms
150 watts @ 8 Ohms
(minimum load = 2 Ohms)


AC FUSE
FUSE
7 AMP
SLO BLO
120 VOLTS
50/60 HZ
840 WATTS
SPEAKER OUTPUTS
1
2
250W X2
STEREO
1
2
LEFT SPEAKER
RIGHT SPEAKER
FUSE
L SPKR
FUSE
8 AMP
BRIDGE
500W MONO
R SPKR
FUSE
8 AMP
FUSE

The SM-500 from SWR Sound Corporation is warranted to the original consumer purchaser for two years from the date of purchase in the U.S.A. against defects in materials and workmanship and provided that it is purchased from an authorized SWR dealer.

This warranty is VOID if the unit has been damaged due to accident, improper handling, installation or operation, shipping damage, abuse or misuse, unauthorized repair or attempted repair, or if the serial number has been defaced or removed. SWR Sound Corporation reserves the right to make such determination on the basis of factory inspection.

All liability for any incidental or consequential damages for breach of any expressed or implied warranties is disclaimed and excluded herefrom.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so that the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

1. Locate your original receipt showing date of purchase, model and serial number.

2. Determine the closest SWR Authorized Service Center to your location. The fastest way to get a complete list of SWR Authorized Service centers is on the web, at:

   http://www.swrsound.com/service/servicecenternetwork.html

   You can also get this information by calling the factory at (818) 253- 4797, prompt 3 (service).

3. In the case where the unit must be shipped, pack your unit carefully (using original packaging whenever possible), and include a copy of your bill of sale. Ship the unit PREPAID to the SWR Authorized Service Center of your choice.

4. SWR Sound Corporation will provide free repair (parts and labor), or replacement at our option, on units determined to be under warranty. In the case of shipping, the SWR Authorized Service center will return the repaired unit to you FREIGHT COLLECT.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION: TO REDUCE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER OR BACK.
NO USER-SERVICEABLE PARTS INSIDE. PLEASE REFER TO A QUALIFIED SERVICE TECHNICIAN.

A. Read Instructions: *All safety and operation instructions should be read before the product is operated.*

B. Retain Instructions: *The safety and operating instructions should be retained for future reference.*

C. Heed Warnings: *All of the warnings on this product and in the operating instructions should be adhered to.*

D. Follow Instructions: *All operating and use instructions should be followed.*

E. Cleaning: *Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a slightly damp cloth for cleaning.*

F. Water and Moisture: *Do not use this product near water; for example, near a swimming pool, wet basement, and the like.*

G. Accessories: *Do not place this product on an unstable cart, stand, tripod, bracket or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product.*

H. Ventilation: *Slots and openings in the unit are provided for ventilation and to ensure reliable operation of the product, to protect it from overheating, thus these openings must not be blocked or covered. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.*

I. Grounding: *This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.*

J. Power Cord Protection: *Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon them, paying particular attention to cords at plugs and the point where they exit the product.*

K. Lightning: *For added protection of this product during a lightning storm or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.*

L. Overloading: *Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock.*

M. Object and Liquid Entry: *Never push objects of any kind into this product through the openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.*

N. Servicing: *Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.*

O. Damage Requiring Service: *Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:*

1) When the power supply cord has been damaged
2) If liquid has been spilled or objects have fallen into the product
3) If the product has been exposed to rain, water, or other conductive liquids
4) If the product does not operate normally by following the operating instructions
5) If the product has been dropped or damaged in any way
6) When the product exhibits a distinct change in performance.

P. Replacement Parts: *When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.*

Q. Safety Check: *Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.*

R. Heat: *The product should be situated away from heat sources such as radiators, heat registers, stoves or other products that produce heat.*

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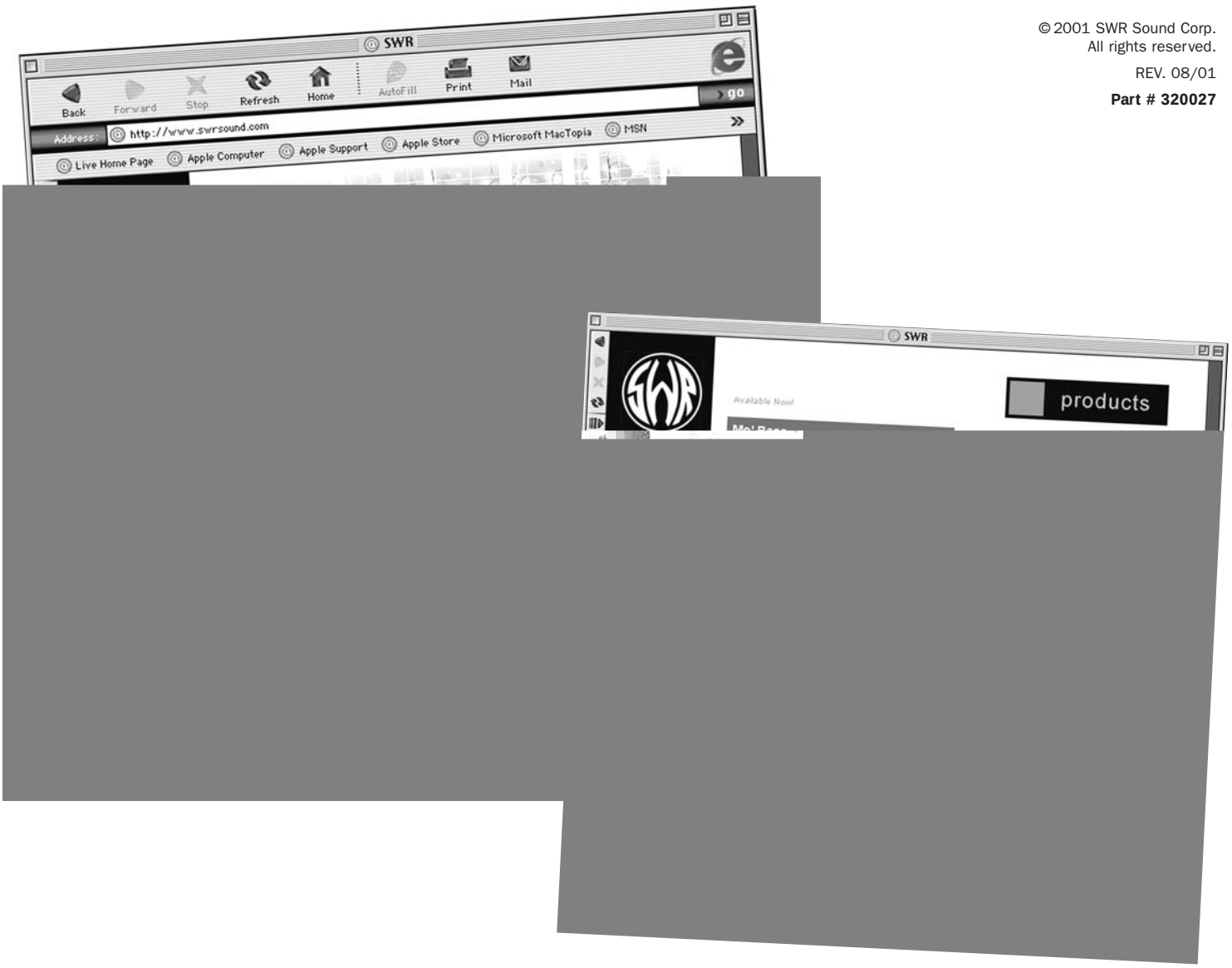
REV. 08/01

Part # 320027



Learn more about SWR products and artists by pointing your browser to:

swrsound.com

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